**IT Applications, Unit 4**

**Ch 6, Developing a solution using spreadsheet software, p 192-213**

Case Study: Point Pleasant Social Service Program – organisational outline and current practice

**Designing spreadsheet solutions and output**

1. Describe what is involved in the solution design stage.

**Spreadsheet Design Tools**

Elaborate under each of the following design tools:

1. IPO chart

* Used during the design process to clearly identify the solutions input, output and the processing steps required to transform the data into information

1. Flow chart, (list what each of the symbols mean from fig. 5-10.

* Used to graphically represent in a logical order the steps required to create a solution or a procedure to use the solution.
* Boxes represent entities (tables)
* Diamonds represent relationships
* Ovals to represent attributes of entities (fields)

1. Formula list

* Shows a detailed list of the formulas to be used to achieve each bit of output identified in the IPO chart.

1. Structure chart

* Graphical representation of how the spreadsheet solution might work

1. Layout diagrams

* Shows the basic layout of each type of worksheet in the spreadsheet solution. Should clearly indicate:
  + Type of data to be entered
  + Contents in each cell
  + Labels
  + Validation rules
  + Formats and conventions
  + Headings

**Formats and conventions, p 202-**

1. list under each of the following subheadings the major formats and conventions that apply to spreadsheets:
   1. numerical information
   * right aligned
   * two decimal places or none
   * align decimal points
   * percentage symbols appear at the top of a column
   * sub totals have a single line about the total
   * grand totals have a single or double line below the total
   * grand totals are in bold
   * symbols indicating unit of measure in the column heading
   * use names ranged of cells to make formulas easier to understand
   1. financial reports
   * use space or comma to separate numbers greater than 999
   * use italics to indicate addition or subtraction
   * subtotals have a single line above the totals
   * include $ sign in the columns heading
   * right align dates
   1. charts and graphs
   * graphs and charts must have titles identifying the name of the organisation and the purpose of the graph or chart
   * x and y axis must be labelled
   * use a key if more than one set provided
   * include author identification, source of data, date and filename
   * include unit of measure
   * Label segments of a pie chart
   * arrange segments of a pie chart with the largest at the top
   * include absolute figures as well as percentages
   * choose colours that match the information being discussed
   * use bar charts to show the differences between values or to show changes over a period of time
   * use pie charts to compare parts of a whole relationship between segments
   * use graphs to show trends or relationships between values of each axis
   * vary the thickness if there is more than one line
   * limit the number of items represented in a chart to five or six

**Designing a macro**

1. What is a macro?

* A macro is an automated series of tasks.

**Validation**

1. Describe each of the following types of validation used in a spreadsheet:
   1. Range checking

* Range checking involves checking to ensure that data falls within a certain range.
  1. Existence checking
* When dealing with product codes a lookup formula is used
  1. Data type checking
* Data type checking can be used if the data needs to be of a particular type
  1. Restricted data entry
* The best way to ensure that data entered is valid, is to restrict data entry
  1. Validation alerts
* As part of the data entry process, electronic data validation methods need alert the user that the data being entered does not adhere to the validation rules

**Planning to test a spreadsheet solution**

1. What is the difference between validation and testing?

* Validation is involved with input whilst testing is concerned with the solution itself and output.

1. Attributes or properties to a spreadsheet solution that need to be tested; elaborate under each of the following testing types:
   1. Functionality testing

* Relates to the activities or actions that it was designed to carry out. When testing functionality in the spreadsheet it is wise to continually test every formula and function to ensure that they do what they are meant to do.
  1. Presentation testing
* During the design stage a decision must be made on the appropriate format of the solution. Some formats and conventions include:
  + Appropriate use of white space and fonts
  + Balance in terms of text and graphs
  + Easily identifiable from the title
  + Whether the text is easy to read
  + Consistent use of fonts and sizes
  + Chose background colours wisely
  1. Usability testing
* All spreadsheets whether they are simple worksheets or complicated solution with macros they need to be user friendly. The information being conveyed should be easily accessible to the users. When testing ask the following questions:
  + Do you need to scroll to read required information?
  + Are worksheets clearly labelled?
  + Do all hyperlinks work?
  + Can users accidently delete formulas?
  1. Accessibility testing
* A spreadsheet solution should be easily accessible. Consider testing for the following:
  + Does the solution open up at the right worksheet?
  + Are the fonts easy to read?
  + Is there limited use of green and red for colour blind people?
  1. Communication of message
* The important information presented in the solution, whatever the format, should be clear and obvious. A good motto is to ‘keep it simple’ too much additional information can cause confusion on the purpose of the report, chart or end result.

**Evaluating the solution and output**

1. What does evaluation consider?

* Evaluation considers the efficiency and the effectiveness of the solution.

1. What information needs to be gathered?

* Information needs to be gathered from a variety of users to determine whether the solution is meeting the system’s goals

1. Who is best to undertake the evaluation?

* The evaluation is usually best completed by someone other than the developer, so that the solution is more likely to be viewed impartially.

1. When are the evaluation criteria developed?

* The evaluation criteria are developed in the design stage so that the system designers know which features to include.